No. 200500102

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

South Dakota Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) MAY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Wendy'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this sixth day of March, in the year two thousand and six.*

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions* — Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
South Dakota Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
SD97W604

3. VARIETY NAME
Wendy

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
South Dakota State University
Ag Hall 129
Brookings SD 57007

5. TELEPHONE *(include area code)*
(605) 688-4149

6. FAX *(include area code)*
(605) 688-6065

FOR OFFICIAL USE ONLY

PVPO NUMBER
2005 00 102

FILING DATE
JAN. 31, 2005

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Agricultural Experiment Station

8. IF INCORPORATED, GIVE STATE OF INCORPORATION
N/A

9. DATE OF INCORPORATION
N/A

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*

Dr. Kevin Kephart, Director
SD Ag Exp Station, Box 2207
South Dakota State University
Brookings SD 57007

Dr. Amir Ibrahim, W. Wheat Breede
Plant Science Department
NPB 244B, Box 2140C, SDSU
Brookings SD 57007

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 3652.00
DATE 1/31/05

CERTIFICATION FEE:
$ 768.00
DATE 2/14/06

11. TELEPHONE *(Include area code)*
(605) 688-4453

12. FAX *(Include area code)*
605-688-4452

13. E-MAIL
Amir.Ibrahim@sdstate.edu

14. CROP KIND *(Common Name)*
Hard white winter wheat

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

- a. [X] Exhibit A. Origin and Breeding History of the Variety
- b. [X] Exhibit B. Statement of Distinctness
- c. [X] Exhibit C. Objective Description of Variety
- d. [X] Exhibit D. Additional Description of the Variety *(Optional)*
- e. [X] Exhibit E. Statement of the Basis of the Owner's Ownership
- f. [X] Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
- g. [X] Filing and Examination Fee ($2,705), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(a) of the Plant Variety Protection Act)*

[XX] YES *(If "yes", answer items 20 and 21 below)* [ ] NO *(If "no," go to item 22)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? [ ] YES [XX] NO

IF YES, WHICH CLASSES? [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

21. DOES THE OWNER SPECIFY THAT THE CLASSES BE LIMITED AS TO NUMBER OF GENERATIONS? [ ] YES [XX] NO

IF YES, SPECIFY THE NUMBER 1, 2, 3, *etc.* [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED

(If additional explanation is necessary, please use the space indicated on the reverse.)

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?

[ ] YES [XX] NO

IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?

[ ] YES [XX] NO

IF YES, GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
NAME *(Please print or type)*	Dr. Kevin D. Kephart	NAME *(Please print or type)*	
CAPACITY OR TITLE	Director, SD Ag Exp Station	CAPACITY OR TITLE	
DATE	1/11/2005	DATE	

EXHIBIT A
Wendy (SD97W604)
Origin and Breeding History of the Variety

Wendy was derived from the cross SD89333/'Abilene' made in 1992. SD89333 is an unreleased experimental line from South Dakota State University with the pedigree 'Gent'/'Siouxland'. Wendy was developed by means of the bulk breeding method. The cross (coded X92259) was advanced to the F_3 generation as a bulk. Seed harvested from the F_3 bulk was sorted for white kernel color in 1995. The bulk of selected white kernels was coded X92259W and was grown in the greenhouse in 1996. Single heads were harvested from the selected F_4 bulk and planted in the field as head-rows in fall 1996. Wendy was derived as an $F_{4:5}$ line selected by S.D. Haley in 1997. Wendy was evaluated as SD97W604 in the South Dakota Early Yield Trial nursery in 1998. It was advanced beyond the Preliminary Yield Trial to the South Dakota Advanced Yield Trial in 1999 due to superior performance. It was tested in the South Dakota Crop Performance Testing (CPT) Variety Trial between 2000 and 2004, in the Northern Regional Performance Nursery during 2001 and 2002, and in the Southern Regional Performance Nursery in 2004.

Composite milling and bread baking properties of Wendy were determined in 2001 and 2002 in cooperative baking tests conducted by the USDA/ARS Hard Winter Wheat Quality Laboratory in Manhattan, KS.

Breeder seed of Wendy originated from a composite of 200 $F_{10:11}$ head-rows selected in 2002 based on visual uniformity and white kernel color purity. Wendy has been uniform for all morphological characters (such as maturity and plant height) during the last four generations of selfing and increase. Wendy contains 0.14% hard red grain. It also contains red and tall white ~~off-types~~ variants in the frequency of 0.05% and 0.01%, respectively.

Per Phone conversation 1/24/2006

EXHIBIT B
Wendy (SD97W604)
Statement of Distinctness

'Wendy' is most similar to the hard white winter wheat cultivar 'Trego', but differs in the following characteristics:

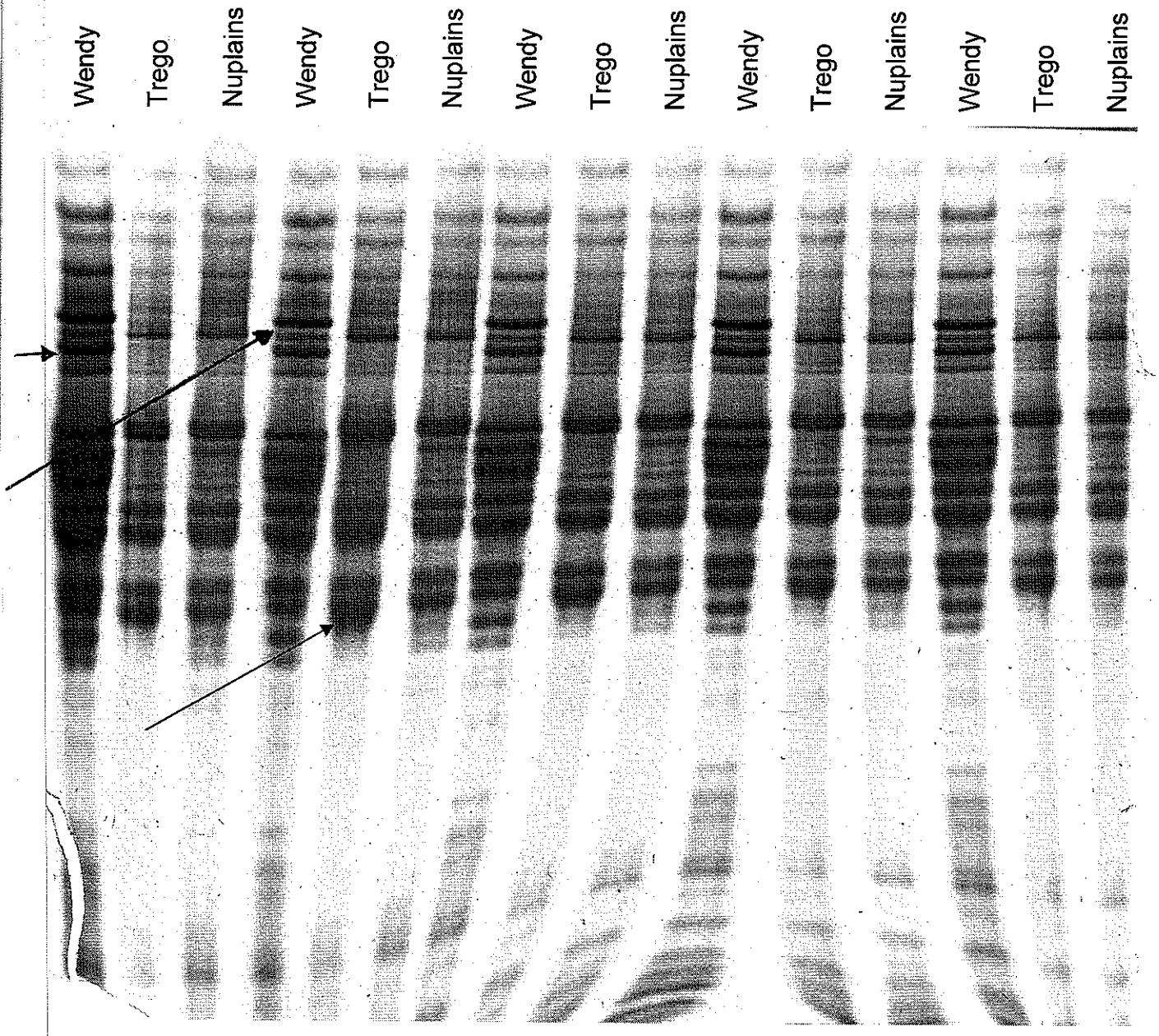
1) **Grain Yield**: Wendy has 0.7 LB/ACRE more grain yield than Trego, when recorded directly from the combine (Table 1).
2) **Test Weight:** Wendy has 0.3 LB/Bu less test weight than Trego, when recorded directly from the combine (Table 1).
3) **Heading Date**: Wendy heading is earlier by two days than Trego (Table 1).
4) **Plant Height**: Wendy is 2.0 inches shorter than Trego (Table 1).
5) **Acid Polyacrylamide Gel Electrophoresis (PAGE)**: Acid Polyacrylamide Gel Electrophoresis shows that Wendy, Trego and 'Nuplains' have distinctly different seed storage protein banding patterns (Photograph 1). The arrows on the photograph point to bands present in Expedition but missing in Alliance and vice versa.
6) **Urea Polyacrylamide Gel Electrophoresis:** Urea Polyacrylamide Gel Electrophoresis also shows that Wendy, Trego and Nuplains have distinctly different seed storage protein banding patterns (Photograph 2). The arrows on the photograph point to bands present in Expedition but missing in Alliance and vice versa

Davis, B. 1964. Disc electrophoresis. II. Method and application to human serum protein. Ann. New York Acad. Sci. 121:404-427.

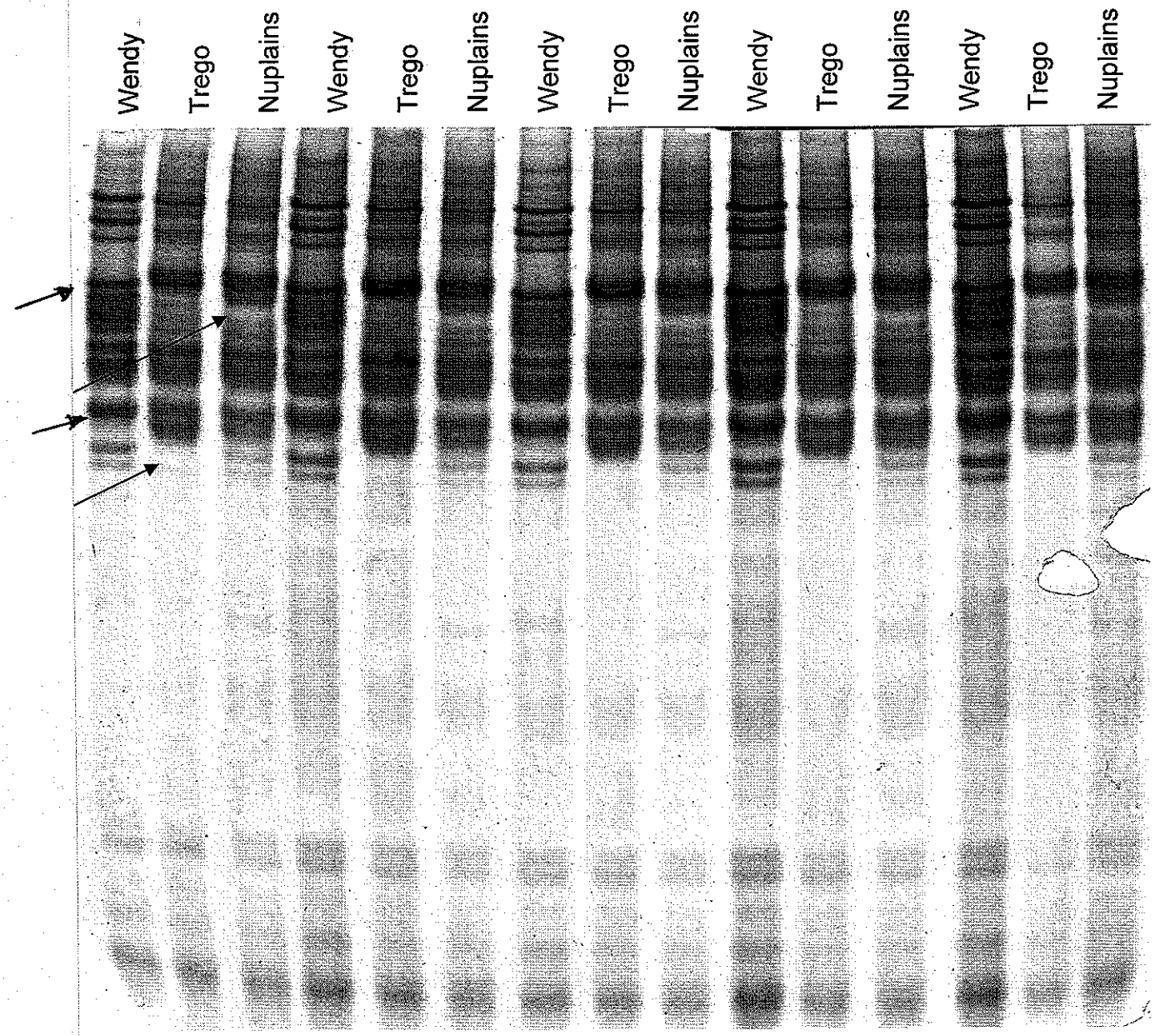
Table 1. South Dakota State University, Winter Wheat Breeding Trials Combined Over Locations and Years (2001 – 2003).

ID	Grain yield (bu/a)	Test weight (lb/bu)	Heading (days)	Height (inches)
ARAPAHOE	50.1	58.2	159	33.0
CRIMSON	46.7	59.4	161	35.1
EXPEDITION	48.9	58.3	156	30.9
HARDING	48.3	58.5	161	35.2
NUPLAINS	46.3	59.2	161	29.6
WENDY	48.7	58.7	156	27.5
TREGO	48.0	59.0	158	29.5
Mean	48.7	58.4	159	31.8
CV%	13.2	3.2	0.7	4.8
LSD 0.05	1.6	0.5	0.5	0.6

Photograph 1. Acid Polyacrylamide Gel Electrophoresis (PAGE) of hard white winter wheat cultivars Wendy, Trego, and Nuplains. The Acid PAGE was conducted by Dr. Brent Turnipseed, Seed Testing Lab, Plant Science Department, South Dakota State University.



Photograph 2. Urea Polyacrylamide Gel Electrophoresis (PAGE) of hard white winter wheat cultivars Wendy, Trego, and Nuplains. The Urea PAGE was conducted by Ms. Mary Thompson, Seed Testing Lab, Plant Science Department, South Dakota State University.



South Dakota State University
SDSU

College of Agriculture and Biological Sciences
Plant Science Department
Box 2140C, NPB 247
SDSU
Brookings, SD 57007-2141
Phone: 605-688-4020
FAX: 605-688-4452

PROCEDURE FOR POLYACRYLAMIDE GEL ELECTROPHORESIS

Written by J. Schneider
and T. Machacek 1988
Revised 1989 by J. Johnson
Revised 1991 by L. Fleege

This paper is written with the intent of passing on some practical information to laboratories which are interested in using polyacrylamide gel electrophoresis (PAGE) for the analysis of varietal purity of seed lots. Perhaps the practical experience we have gained from organizing and implementing our system will be of some assistance.

The lists which have been compiled are quite comprehensive of the needs for setting up a laboratory for PAGE. Personal preference may dictate changes in the glass and hardware, however the items listed seem to work the best for us. The equipment listed is essential for producing clear and reproducible results.

The chemical sources listed are those recommended to us (Lookhart et al., 1981) as the ones that produce the best results. Aluminum Lactate quality is important; it should be pure white (powdered sugar color). Impure Aluminum Lactate will result in blurred electrophorograms.

Reference samples of foundation seed (one pound) of each variety to be tested were collected and stored in plastic containers.

Thirty gram samples are collected in Udy boules following purity testing. 100 seeds counted from each sample are ground in a small coffee grinder (Miracle Mill) and sifted through a 1.016 sieve. Use caution to avoid contamination between samples. Cleaning the grinder and sieve with forced air between samples is recommended.

PROTEIN EXTRACTION

Using a fine point marking pen, mark a 1.5 ml centrifuge tube for each sample. Wheat into each tube, add 750 µl of Ethylene glycol and 0.25 g of flour. Extractions mix easier if the ethylene glycol is put in the tube first. Vortex the samples and wait an hour before centrifuging. Oat: into each tube, add 700 µl of ethylene glycol and 0.30 g of flour. Vortex the samples and wait one hour before centrifuging. Single Seed: Crush each seed between weighing paper with a pliers. Place each into centrifuge tubes with 100 µl of ethylene glycol and allow to set 1 hour. Load the centrifuge evenly. Run it on low speed (4500 x g recommended) for 10 minutes. [Optional: Add one drop of 10% methyl green dye (1 g methyl green brought to a volume of 10ml with H_2O) to each sample with a small sized auto pipette].

MIXING THE GEL SOLUTION

Each 1.5 mm thick gel will require 50 ml of gel solution. Use a 125 ml vacuum flask with stopper when mixing 100 ml of gel solution. Into the flask add each of the following: Note: when working with the gel solution wear gloves and a mask as acrylamide is a neurotoxin until it has solidified.

For two gels: Aluminum Lactate (0.25g); Ascorbic Acid (0.024g); $FeSO_4$-$7H_2O$ (200μ of 10mg/10ml mixed fresh);
Wheat: Bis-Acrylamide (0.25g), Acrylamide (6.00g);
Oat: Bis-Acrylamide (0.4g), Acrylamide (7.50g). Add distilled water to obtain a volume of 100ml.

Add a stir bar, stopper the flask, and place on the stirrer at slow speed, connect the vacuum and allow it to stir for 20 minutes. (The vacuum step is optional.) After this time is up, allow the solution to continue stirring while the pH is checked and adjusted. Lower the pH to 3.1 by titrating with Lactic Acid. If the pH is over adjusted, Trizma base (5M) can be used to increase the pH without adverse effects. Divide the solution into 2 portions in 100ml flasks containing stir bars.

Prepare the gel plates making sure that they are tightly sealed to the rubber gaskets. (This is very important but easy to forget).

Place one of the flasks containing gel solution on the stir plate at very slow speed. Note: excessive agitation mixes in oxygen which ties up the catalyst and prevents complete polymerization. Add 25 μl of H_2O_2 and allow to stir for 45 seconds. Carefully pour the solution between the plates until it is 1/4" from the top. Insert the gel comb making sure there are no bubbles trapped on the well ends. Repeat the procedure for the other gel and allow both to polymerize for 15 minutes.

TANK BUFFER

While waiting for the gel to polymerize, mix the tank buffer. Place 5.625 g of Aluminum Lactate in a 4000 ml flask. Fill the flask to approximately 4500 ml (middle of the neck on a 4000 ml flask) with distilled H_2O and stir. While the buffer stirs, check the pH. Titrate to 3.1 using Lactic Acid.

SAMPLE PLACEMENT

By this time the gel should be polymerized. Carefully remove the gel comb. Careless removal can cause suction, pulling the gel walls together and possibly breaking them. Pipette out any excess fluid in the slots using a long needle syringe. If the walls of the gel are crooked, they can be straightened at this time with the needle. Fill the slots about 2/3 full with buffer solution. Then, using a digital pipette, place 7.5 μl of the sample extract (12μl for single seeds) into the slots. The extract should sink to the bottom. Using a pasteur pipette finish filling the slots with buffer.

RUNNING THE GEL

Attach the upper buffer chamber to the gel plates making sure of a tight seal. Fill the upper buffer chamber with buffer one inch from the top. Pour the remaining buffer into the lower buffer chamber along with the stir bar. Set the tank on a stir plate and set the stir plate to a fast speed. This aids in maintaining an even temperature during the run.

Put the apparatus together. Make sure that the cathode is connected to the lower buffer and the anode to the top. Start the water bath and set it for 15C. Set the power source to constant current, switch it on and turn power up to 500 volts. The amperage, when running two gels, should initially read approximately 160 to 170 ma. Allow it to run 2

hours for wheat and oats.

MIXING THE STAINING SOLUTION

Take safety precautions to prevent eye and skin contact when working with the acid solutions. To make 600 ml of stain, mix in a 1000 ml flask the following: 100 grams TCA and 600 ml distilled H_2O. Add 20 ml of 1% Comassic brilliant blue (CBB) solution (1g CBB per 100ml ETOH).

REMOVING THE GELS

After 2 hours turn the power off and remove the gel plates. Remove the spacers and pry the plates apart (It is recommended using one of the spacers for this task. Take care as to not damage the spacer in the process). To keep track of the slot order, cut off the lower left hand corner. Then remove the slot fringes. The gel can then be loosened by running a spatula between it and the glass plate while squirting water in the gap created by the spatula. The gel should slide off into the staining pan (be sure to label the pan).

STAINING

Remove any excess water and add 300ml of stain. Place the trays on a shaker at gentle speed and allow them to stain for at least 4-6 hours. Over staining will not harm the gels or their results. Sometimes overnight staining is more convenient.

DESTAINING

Remove the stain (A handy way to remove liquids is with the vacuum pump. Put a catch bottle in the line and use a pasteur pipette in the hose end.) Add 300ml of H_2O to the tray. Put the trays on the shaker and allow to destain for 2-6 hours or whatever is necessary for acceptable results. A useful tool for moving the gel is a piece of plastic 11" x 6" from a report cover. Use the plastic sheet to place the gels into one quart zip-lock freezer bags.

CLEANING THE GEL PLATES

For easy and flawless removal of the gels, a thorough cleaning of the plates is essential. Wash them well with soapy water. Then wipe them down with ammonia glass cleaner or ethanol. Put the glass together with the spacers and clamps making sure that everything is flush on the bottom. Put them in the stand, insert the combs, and cover with plastic wrap. They are now ready for the next use.

8

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)	FOR OFFICIAL USE ONLY
	PVPO NUMBER 2005 00 102
ADDRESS *(Street and No. or RD No., City, State, and Zip Code)*	VARIETY NAME Wendy
	TEMPORARY OR EXPERIMENTAL DESIGNATION SD97W604

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. [0][9][9] or [0][9]) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used:
Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

[1] 1=Common 2=Durum 3=Club 4=Other (SPECIFY) : _____

2. VERNALIZATION:

[2] 1=Spring 2=Winter 3=Other (SPECIFY) : _____

3. COLEOPTILE ANTHOCYANIN:

[1] 1=Absent 2=Present

4. JUVENILE PLANT GROWTH:

[2] 1=Prostrate 2=Semi-erect 3=Erect

5. PLANT COLOR (boot stage):

[2] 1 = Yellow-Green 2 = Green 3 = Blue-Green

6. FLAG LEAF (boot stage):

[2] 1 = Erect 2 = Recurved [ ] 1 = Not Twisted 2 = Twisted

7. EAR EMERGENCE:

[0][5] Number of Days Earlier Than Harding *

[0][0] Number of Days Later Than Expedition *

9

8. ANTHER COLOR:

[1] 1 = Yellow 2 = Purple

9. PLANT HEIGHT (from soil to top of head, excluding awns):

[ ] cm Taller Than none *

[0 8] cm Shorter Than Expedition *

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

10. STEM:

A. ANTHOCYANIN

[1] 1= Absent 2=Present

B. WAXY BLOOM

[1] 1=Absent 2=Present

C. HAIRINESS (last internode of rachis)

[1] 1=Absent 2=Present

D. INTERNODE (SPECIFY NUMBER)

[1] 1= Hollow 2=Semi-solid 3=Solid

E. PEDUNCLE

[1] 1=Absent 2=Present

[15] cm Length

11. HEAD (at Maturity):

A. DENSITY

[2] 1=Lax 2=Middense 3= Dense

B. SHAPE

[1] 1 = Tapering 2= Strap 3 = Clavate 4 = Other (SPECIFY): _____

C. CURVATURE

[2] 1 = Erect 2 = Inclined 3 = Recurved

D. AWNEDNESS

[4] 1 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES (at Maturity):

A. COLOR

[1] 1 = White 2 = Tan 3 = Other (SPECIFY) : _____

B. SHOULDER

[1] 1 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate

C. BEAK

[3] 1 = Obtuse 2 = Acute 3 =Acuminate

D. LENGTH

[2] 1 = Short (ca. 7mm) 2 = Medium (ca. 8mm) 3 = Long (ca. 9mm)

12. GLUMES (at Maturity) *Continued*:

2005 00 102

E. WIDTH

[2] 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm) 3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

[3] 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

[1] 1=Rounded 2=Angular

C. BRUSH

[1] 1=Short 2=Medium 3=Long

[1] 1 = Not Collared 2 = Collared

D. CREASE

[1] 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

[1] 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

E. Color

[1] 1=White 2= Amber 3= Red
4= OTHER (Specify)

G. PHENOL REACTION *(see instructions)*:

[3] 1 = Ivory 2 = Fawn
3 = Light Brown 4 = Dark Brown
5 = Black

F. TEXTURE

[1] 1=Hard 2=Soft

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

[2] Stem Rust *(Puccinia graminis* f. sp. *tritici)*

[1] Stripe Rust *(Puccinia striiformis)*

[2] Tan Spot *(Pyrenophora tritici-repentis)*

[0] Halo Spot *(Selenophoma donacis)*

[0] *Septoria nodorum* (Glume Blotch)

[0] *Septoria avenae* (Speckled Leaf Disease)

[0] *Septoria tritici* (Speckled Leaf Blotch)

[1] Scab (*Fusarium* spp.)

[3] Leaf Rust *(Puccinia recondita* f. sp. *tritici)*

[0] Loose Smut *(Ustilago tritici)*

[0] Flag Smut *(Urocystis agropyri)*

[0] Common Bunt *(Tilletia tritici* or *T. laevis)*

[0] Dwarf Bunt *(Tilletia controversa)*

[0] Karnal Bunt *(Tilletia indica)*

[0] Powdery Mildew *(Erysiphe graminis* f. sp. *tritici)*

[0] "Snow Molds"

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14. Disease *(Continued)* (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

[0]	"Black Point" (Kernel Smudge)	[0]	Common Root Rot *(Fusarium, Cochliobolus* and *Bipolaris* spp.*)*
[0]	Barley Yellow Dwarf Virus (BYDV)	[0]	Rhizoctonia Root Rot *(Rhizoctonia solani)*
[1]	Soilborne Mosaic Virus (SBMV)	[0]	Black Chaff *(Xanthomonas campestris* pv. *translucens)*
[0]	Wheat Yellow (Spindle Streak) Mosaic Virus	[0]	Bacterial Leaf Blight *(Pseudomonas syringae* pv. *syringae)*
[2]	Wheat Streak Mosaic Virus (WSMV)	[ ]	Other (SPECIFY)
[ ]	Other (SPECIFY)	[ ]	Other (SPECIFY)
[ ]	Other (SPECIFY)	[ ]	Other (SPECIFY)
[ ]	Other (SPECIFY)	[ ]	Other (SPECIFY)

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

[1]	Hessian Fly *(Mayetiola destructor)*	[ ]	Other (SPECIFY)
[0]	Stem Sawfly *(Cephus* spp.)	[ ]	Other (SPECIFY)
[0]	Cereal Leaf Beetle *(Oulema melanopa)*	[ ]	Other (SPECIFY)
[0]	Russian Aphid *(Diuraphis noxia*	[ ]	Other (SPECIFY)
[0]	Greenbug *(Schizaphis graminum)*	[ ]	Other (SPECIFY)
[0]	Aphids	[ ]	Other (SPECIFY)

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

Exhibit D
Wendy (SD97W604)
Additional Description of the Variety

The following additional descriptive information is presented:

1) Release notice of Wendy.
2) Table 2: Yield, test weight, heading, and plant height data of Wendy in the South Dakota Crops Performance Testing (CPT) variety trial in 23 locations-years.
3) Table 3: Yield and test weight performance data of Wendy in the South Dakota Crops Performance Testing (CPT) variety trial in 2004.
4) Table 4: Yield and test weight performance data of Wendy in the South Dakota Crops Performance Testing (CPT) variety trial in 2003.
5) Table 5: Yield and test weight performance data of Wendy in the South Dakota Crops Performance Testing (CPT) variety trial in 2002.
6) Table 6: Milling and baking data of Wendy in the South Dakota Crops Performance Testing.
7) Table 7: Quality parameters of selected lines grown in South Dakota environments and tested at the Hard Winter Wheat Quality Laboratory, USDA/ARS, Manhattan, KS.

South Dakota Agricultural Experiment Station

South Dakota State University

Plant Science Department

Release of 'Wendy' Hard White Winter Wheat

'Wendy' hard white winter wheat (*Triticum aestivum* L.) was developed by the South Dakota Agricultural Experiment Station and released to seed producers in August 2004. Wendy was released on the basis of its white grain color, good noodle quality, excellent winter survival, earliness, and high yield potential in South Dakota and the northern Great Plains region. Wendy has been named in memory of Wendy Wickersham, secretary for South Dakota Wheat Inc. from 2003-2004.

Wendy was derived from the cross SD89333/'Abilene' made in 1992. SD89333 is an unreleased experimental line from South Dakota State University with the pedigree 'Gent'/'Siouxland'. Wendy was developed by means of the bulk breeding method. The cross (coded X92259) was advanced to the F_3 generation as a bulk. Seed harvested from the F_3 bulk was sorted for white kernel color in 1995. The bulk of selected white kernels was coded X92259W and was grown in the greenhouse in 1996. Single heads were harvested from the selected F_4 bulk and planted in the field as head-rows in fall 1996. Wendy was derived as an $F_{4:5}$ line selected by S.D. Haley in 1997. Wendy was evaluated as SD97W604 in the South Dakota Early Yield Trial nursery in 1998. It was advanced beyond the Preliminary Yield Trial to the South Dakota Advanced Yield Trial in 1999 due to superior performance. It was tested in the South Dakota Crop Performance Testing (CPT) Variety Trial between 2000 and 2004, in the Northern Regional Performance Nursery during 2001 and 2002, and in the Southern Regional Performance Nursery in 2004. Breeder seed of Wendy originated from a composite of 200 $F_{10:11}$ head-rows selected in 2002 based on visual uniformity and white kernel color purity.

Wendy is an awned, white-glumed, early maturing, semi-dwarf hard white winter wheat. Wendy has green foliage at anthesis. The spike is tapered, inclined, and mid-dense. The glume size is medium, and the glume shoulder has a wanting shape. The beak is medium in length with an acuminate tip. Kernels are white, hard textured, and elliptical in shape with a collarless short brush, rounded cheeks, and a shallow crease.

Wendy is early maturing (146 d to heading from 1 Jan.), 1 d earlier than 'Expedition' (PI 629060), 3 d earlier than 'Wesley' (PI605742), and 6 d earlier than 'Harding' (PI608049) in South Dakota yield trials. Plant height (75 cm) of Wendy was similar to Wesley and 15 cm less than Harding. The winter survival of Wendy is good to excellent (similar to Harding). It has a short coleoptile (60 mm; 86% of Wesley; 75% of Expedition; and 67% of Harding) and excellent straw strength (similar to Wesley). Wendy has fair to good resistance to pre-harvest sprouting (3.7 score; 1 = highly resistant to 9 = highly susceptible), similar to Trego (PI612576) (3.4), higher than Millennium (PI613009) (5.0) and Jerry (PI632433) (8.0), and lower than Expedition (1.9) and Nekota (PI584997) (1.0). Because of its level of sprouting resistance, Wendy will be best adapted to areas west of the Missouri river in South Dakota.

In 31 site-years of testing in the South Dakota CPT, yield of Wendy (3534 kg ha^{-1}) was higher than 'Harding' (3468 kg ha^{-1}), 'Wesley' (3451 kg ha^{-1}), 'Expedition' (3413 kg ha^{-1}), 'Arapahoe' (PI518591) (3395 kg ha^{-1}), and 'Trego' (3405 kg ha^{-1}), and lower than 'Millennium' (3625 kg ha^{-1}) and 'Jagalene' (3663 kg ha^{-1}). Wendy had similar volume weight to Trego (764 kg m^{-3}) higher than Wesley (745 kg m^{-3}) and lower than Jagalene (775 kg m^{-3}).

Wendy has moderate resistance to stem rust (caused by *Puccinia graminis* f. sp. *tritici*.) and has been postulated to carry *Sr24* and *Sr31* based on tests conducted by the USDA Cereal Disease Laboratory, St. Paul, MN. Wendy has been confirmed to be homogeneous for the 1BL.1RS wheat-rye translocation based on SDS-PAGE gel analysis. It is moderately susceptible to leaf rust (caused by *Puccinia triticina* Eriks.) and is tolerant to tan spot (caused by *Pyrenophora tritici-repentis* (Died.) Drechs.). Wendy is moderately susceptible to wheat streak mosaic virus, and is susceptible to the Great Plains biotype of Hessian fly [*Mayetiola destructor* (Say)]. Wendy has exhibited intermediate reaction to wheat soil-borne mosaic virus.

Composite milling and bread baking properties of Wendy were determined in 2001 and 2002 in cooperative baking tests conducted by the USDA/ARS Hard Winter Wheat Quality Laboratory in Manhattan, KS. Milling scores were very good while baking scores were poor. Relative to the hard white check cultivars Trego and 'Nuplains' (PI605741), Wendy had medium-sized kernels (28.2 versus 29.0 and 25.7 mg, respectively). Flour extraction of Wendy, Trego, and Nuplains was 672, 667 and 673 g kg^{-1}, respectively. Flour ash of Wendy was similar to Trego (4.2 g kg^{-1}) and slightly lower than Nuplains (4.3 g kg^{-1}). Flour protein of Wendy (112 g kg^{-1}) was lower than Nuplains (115 g kg^{-1}) and higher than Trego (110 g kg^{-1}). In bread baking tests, bake absorption of Wendy (585 g kg^{-1}) was lower than both Nuplains (615 g kg^{-1}) and Trego (612 g kg^{-1}), while its loaf volume was similar to Nuplains (0.88 L) and higher than Trego (0.85 L). Wendy had lower mixograph tolerance than both Trego and Nuplains (1.0 versus 2.5 and 3 scores, respectively; 0 = unacceptable to 6 = excellent scale). Wendy had lower mixograph mix time (3.7 min) than Trego (4.1 min) and Nuplains (5.1 min). Wendy was tested in the Wheat Quality Council in 2003. It was slightly better than Crimson (PI601818), and had good milling and acceptable bread baking quality characteristics. Wendy has low grain polyphenol oxidase (PPO) levels. In tests conducted by the Asian Products Collaborative (APC) Project, coordinated by the U.S. Wheat Associates and the Wheat Marketing Center, in 2003, Wendy was similar or better than Australian standards for Korean steamed buns, modified Chinese northern type steamed bread, and Chinese raw noodles.

Breeder seed of Wendy originated from a composite of 200 $F_{10\,11}$ head-rows selected in 2002 based on visual uniformity and white kernel color purity. Wendy has been uniform for all morphological characters (such as maturity and plant height) during the last four generations of increase. Wendy contains 0.14% hard red grain. It also contains red and tall white off-types in the frequency of 0.05% and 0.01%, respectively.

The South Dakota Foundation Seed Stocks Division (Plant Science Department, South Dakota State University, Brookings, SD) has foundation seed of Wendy available to seed producers for planting during fall 2004. Seed classes will be Breeder, Foundation, Registered, and Certified. Wendy will be submitted for plant variety protection under P.L. 910577 with the certification option.

Approval

Director, South Dakota Agricultural Experiment Station

Date

Table 2. Agronomic data for Wendy (2001 - 2003)

Entry	ID	GY	TW	SS	HD	HT
1	ALLIANCE	48.5	57.6	7.0	157	30.9
2	ARAPAHOE	50.1	58.2	7.0	159	33.0
3	CRIMSON	46.7	59.4	7.2	161	35.1
4	EXPEDITION	48.9	58.3	7.2	156	30.9
5	FALCON	51.0	57.1	7.0	160	29.5
6	HARDING	48.3	58.5	7.2	161	35.2
7	JERRY	49.4	57.7	6.8	162	35.3
8	MILLENNIUM	51.6	59.5	6.8	160	33.6
9	NEKOTA	48.1	58.7	7.0	157	29.8
10	NUPLAINS	46.3	59.2	6.1	161	29.6
11	RANSOM	46.6	57.0	7.1	162	35.5
12	SD92107-3	48.1	58.1	7.0	161	34.1
13	SD92107-5	49.2	58.9	7.1	162	34.7
14	SD97049	47.5	57.8	6.5	158	29.5
15	SD97250	47.8	58.2	7.2	159	32.7
16	WENDY	48.7	58.7	6.2	156	27.5
17	SD97W609	49.3	58.7	6.4	157	28.3
18	TANDEM	48.8	59.7	7.2	159	34.1
19	TREGO	48.0	59.0	6.5	158	29.5
20	WAHOO	49.6	57.1	6.6	159	31.4
21	WESLEY	49.7	58.2	7.1	157	28.0
Mean		48.7	58.4	6.9	159	31.8
CV%		13.2	3.2	19.4	0.7	4.8
LSD 0.05		1.6	0.5	0.5	0.5	0.6

Table 3. **Grain Yield and Test Weight data for the 2004 Crops Performance Testing (CPT) Variety Trial**

Entry	Grain Yield (bu/a)												TW (lb/bu)
	2004 Average	2-yr	3-yr	Brookings	D. Lakes Pea	Highmore	Platte	Selby	Sturgis	Wall	Water-town	Winner	Average
SD97538	65	61		103	55	78	63	77	29	53	47	58	59
SD92107-5	63	59	53	96	52	78	76	71	27	61	42	49	59
SD00W024	63			99	53	71	71	70	28	59	44	53	59
SD97059-2	62	61		98	51	82	62	72	24	52	52	52	58
SD97394-1	62			99	58	77	62	75	29	47	46	51	59
SD98102	62	60	53	92	54	78	69	73	30	49	53	49	59
WAHOO	62	61	54	100	53	78	63	70	26	57	37	52	58
HARDING	61	58	52	93	46	76	72	68	27	56	45	52	58
JERRY	61	58	51	106	46	79	62	71	29	53	45	40	58
SD00258	61			103	47	73	66	70	24	50	47	52	58
MILLENNIUM	60	60	54	100	47	74	60	70	29	47	46	55	59
SD99073	60			91	57	76	61	66	24	49	46	51	59
JAGALENE	59	60	55	82	58	73	55	72	24	52	39	60	60
NE99533-4	59			90	55	73	60	67	29	50	44	50	60
SD97250	59	56	51	88	54	74	63	64	27	46	56	49	59
ALLIANCE	59	57	51	83	53	75	64	71	29	46	50	51	59
SD00111	58			84	55	76	59	71	24	46	46	48	59
SD97380-2	58	58		90	51	77	59	67	24	45	48	47	59
SD00032	57			90	53	71	57	68	19	46	53	49	59
TANDEM	57	55	50	84	53	71	63	65	26	51	42	46	60
SD97W671-1	57	57		88	55	76	53	67	21	47	41	46	59
WESLEY	56	57	51	96	47	72	60	58	25	48	42	39	58
SD97W609	56	58	52	86	50	67	58	69	22	41	38	44	58
TREGO	55	56	51	82	49	68	59	63	27	36	49	57	61
NEKOTA	55	55	50	86	51	72	58	60	28	45	31	47	59
SD00W041	54			78	45	73	56	65	21	49	25	56	59
ARAPAHOE	54	56	51	79	45	74	57	71	21	40	34	47	58
CRIMSON	54	55	48	80	53	64	57	66	27	48	41	38	59
EXPEDITION	53	56	51	91	45	62	58	62	21	47	39	40	60
SD97W604	53	57	53	86	42	66	48	65	25	45	39	50	59
MEAN	59	58	52	91	51	74	61	68	26	49	44	49	59
LSD .05	3.5	2.1	1.8	16.4	13.1	7.6	10.4	6.9	7.2	5.7	13.8	8.1	0.47
CV%	12.2	11.6	13.4	12.9	18.2	7.2	12.1	7.2	17.4	8.1	15.5	11.64	1.6

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Table 4. Yield and test weight performance data of Wendy (SD97W604) in the South Dakota CPT in 2004

ID	GY AVG	TW AVG	Grain Yield bu/ac											
			Bis	Oel	Mar	Hay	Stu	DLP	Bro	Wal	Win	Pla	Hig	Ken
SD97W604	60.8	60.9	57.2	66.1	68.0	63.8	45.4	35.8	89.6	40.4	49.9	72.6	51.2	89.8
SD97W609	60.2	60.3	51.8	68.7	64.3	57.1	44.3	38.5	82.9	43.0	53.5	73.0	60.8	84.8
JAGALENE	60.1	60.9	55.2	76.6	67.7	61.5	43.9	33.1	90.2	35.0	45.8	65.3	57.4	89.2
MILLENNIUM	59.7	60.7	55.6	62.6	68.6	62.5	43.6	37.8	91.3	41.6	50.2	68.9	56.8	77.0
WAHOO	59.3	58.2	53.5	70.7	75.2	53.8	44.9	36.6	85.7	40.1	48.7	65.4	56.8	80.6
SD97538	58.3	59.3	49.4	68.9	72.0	55.5	47.4	36.0	86.5	40.9	44.4	64.7	50.9	83.6
WESLEY	58.2	59.2	51.9	64.9	70.8	61.5	40.7	36.4	83.1	44.3	43.1	66.1	55.4	79.9
SD98102	58.1	59.6	49.3	67.9	67.8	47.1	46.5	36.3	84.0	44.3	50.0	71.3	54.1	79.2
EXPEDITION	58.0	59.8	54.5	72.3	68.0	58.4	43.8	37.5	78.6	39.5	46.9	63.5	51.2	82.0
SD97059-2	58.0	58.9	52.7	61.4	65.8	44.3	44.1	36.3	98.9	43.0	46.9	62.7	53.6	86.4
SD97380-2	57.9	58.9	49.9	68.5	67.1	57.3	46.1	39.4	89.4	37.0	46.6	59.9	56.0	78.0
SD99W015	57.4	59.5	51.8	66.5	65.3	54.1	46.0	36.5	76.9	41.3	49.3	70.8	54.4	76.1
FALCON	57.3	59.4	56.5	66.8	61.5	50.7	43.5	35.9	83.3	41.1	47.3	60.3	55.7	85.1
ARAPAHOE	57.2	59.3	52.8	64.5	67.8	57.2	45.8	38.0	85.3	35.9	45.1	59.6	57.0	77.9
SD97049	56.6	58.8	51.3	66.6	65.9	50.4	42.7	31.4	87.4	43.4	43.5	69.4	56.4	70.7
SD97W671-1	56.2	60.2	52.8	71.0	63.6	43.9	43.7	35.6	77.9	43.0	52.8	62.9	54.6	73.0
SD97088	56.2	59.8	48.1	65.0	66.6	48.2	44.4	33.8	88.5	45.4	43.8	65.1	53.6	72.2
TREGO	56.0	60.2	56.9	69.8	69.6	55.0	43.2	33.5	75.6	38.3	42.9	61.3	51.9	73.5
ALLIANCE	55.4	58.5	52.6	70.7	69.3	54.0	43.6	37.4	70.9	43.6	41.3	55.5	53.4	72.8
SD92107-5	55.3	60.3	49.7	66.3	66.8	47.3	42.2	31.4	83.3	44.4	43.5	59.4	54.8	74.3
HARDING	54.8	59.9	52.8	68.0	64.6	45.9	39.5	37.6	88.4	39.2	41.6	55.3	54.5	70.3
NEKOTA	54.7	59.9	50.5	69.6	60.0	51.6	41.8	34.4	79.0	41.7	48.5	61.7	49.3	68.5
SD97250	54.4	59.2	50.6	66.8	61.4	51.3	44.3	34.5	79.3	36.9	45.9	62.5	53.0	66.6
JERRY	54.3	59.7	50.4	56.6	59.0	47.3	40.0	36.2	86.5	41.4	46.2	57.0	56.9	74.8
CRIMSON	53.8	61.2	53.0	68.7	60.0	38.2	40.2	42.5	84.8	42.4	45.8	55.2	48.4	66.3
TANDEM	53.5	61.2	52.4	65.6	67.5	48.9	41.5	35.4	74.7	42.9	45.4	51.0	52.2	65.1
SD92107-3	53.4	59.5	48.0	60.7	65.0	43.8	43.4	35.6	86.7	37.6	41.8	56.0	53.2	69.4
NUPLAINS	53.2	61.2	48.6	65.0	58.5	49.7	41.3	37.9	86.6	43.9	44.9	51.2	50.4	60.1
AP502CL	53.0	57.5	50.7	72.8	60.6	60.3	37.6	36.3	63.3	39.5	42.6	61.1	40.2	71.2
RANSOM	49.6	58.7	47.0	54.5	55.5	44.9	39.2	33.5	77.6	36.8	45.0	49.0	48.4	63.8
Mean	56.4	59.7	51.9	66.8	65.4	52.2	43.1	36.0	83.2	40.9	46.0	61.9	53.4	75.4
CV%			8.0	6.5	4.3	10.9	5.9	11.6	8.8	12.1	8.5	10.7	8.1	9.8
LSD (0.05)			5.8	6.1	3.9	8.0	3.6	6.0	10.3	6.9	5.9	9.4	6.2	2.0

Table 5. Grain yield and test weight means for 2002 South Dakota winter wheat crop performance testing (CPT) variety trial

Entry	ID	HAY GY	HAY TW	MAR GY	MAR TW	OEL GY	OEL TW	STU GY	STU TW	HIG GY	HIG TW	SEL GY	SEL TW	WIN GY	WIN TW	WAL GY	WAL TW	WAT GY	WAT TW	PLA GY	PLA TW	BRO GY	BRO TW	MEAN GY	MEAN TW
11	QUANTUM7406	40	61	76	63	50	57	46	59	33	60	28	57	36	51	36	60	47	56	63	60	55	59	46	58
4	JAGALENE	37	62	68	64	49	57	55	62	32	60	35	58	43	55	31	61	34	58	58	61	55	60	45	60
33	SD97W604	31	63	55	63	49	57	47	61	27	59	32	58	46	57	32	60	45	56	52	60	52	60	43	59
3	FALCON	29	58	64	62	40	53	43	57	36	57	32	53	40	50	31	54	41	54	56	56	54	57	42	56
9	WESLEY	34	60	68	63	46	53	47	58	29	59	25	57	34	51	32	59	39	56	60	58	52	58	42	57
23	SD97457	31	60	60	63	45	57	47	60	25	59	28	57	40	54	32	59	42	55	58	59	54	59	42	58
13	MILLENNIUM	34	61	54	62	50	57	44	60	30	59	32	58	27	49	32	59	49	57	54	59	52	60	42	58
8	TANDEM	33	62	58	63	45	58	44	62	33	59	28	58	37	55	33	59	41	57	57	60	49	58	42	59
14	WAHOO	33	58	55	60	48	53	43	57	33	58	29	55	20	48	35	57	43	54	57	57	54	56	41	56
2	ARAPAHOE	29	59	60	61	44	54	47	59	29	58	32	56	24	50	32	58	45	56	58	58	52	58	41	57
34	Ch (SD97W604)	30	63	55	63	48	56	43	61	29	60	31	58	41	54	31	61	40	57	53	60	50	62	41	59
5	NEKOTA	35	61	66	63	46	57	42	60	25	59	26	57	35	52	30	60	39	56	55	59	49	61	41	59
22	SD97250	28	60	46	61	39	54	49	61	25	58	30	57	35	52	30	59	46	55	60	59	55	59	40	58
32	TREGO	31	61	52	63	44	57	43	60	24	61	25	58	42	54	29	59	42	58	55	60	53	61	40	59
10	STANTON	30	61	58	63	46	57	45	59	26	59	27	58	34	52	31	58	37	56	54	60	49	60	40	58
30	NUFRONTIER	35	61	52	62	46	56	45	60	30	60	23	54	33	53	32	60	33	55	57	60	52	58	40	58
1	ALLIANCE	33	59	51	60	44	54	39	57	25	58	27	55	39	53	32	57	38	54	57	58	51	57	40	56
19	SD92107-3	27	59	49	62	37	54	46	61	34	59	30	57	36	53	28	56	46	56	50	57	51	60	40	58
20	SD92107-5	28	58	57	62	40	55	46	60	30	59	27	57	28	50	25	56	45	56	51	58	53	60	39	57
37	NW98S059	29	61	59	62	46	57	37	58	29	60	27	57	30	50	28	58	42	56	52	59	52	58	39	58
21	SD97049	29	60	42	61	46	56	47	60	24	59	28	56	35	53	30	58	41	55	56	59	52	58	39	58
12	_2137	27	58	50	61	44	54	46	59	22	59	29	56	36	50	31	59	38	56	57	58	50	59	39	57
18	HARDING	30	59	56	62	41	53	44	60	29	59	25	56	27	51	28	56	45	55	53	57	51	60	39	57
35	SD97W650	30	60	53	63	45	57	39	59	27	60	28	58	26	53	30	59	39	56	55	60	57	58	39	59
28	NUPLAINS	27	63	50	63	40	57	41	59	30	61	26	58	33	55	29	61	36	58	52	61	65	60	39	60
29	AVALANCHE	31	61	53	62	47	58	43	60	27	60	26	58	49	56	29	60	23	56	48	59	48	61	39	59
26	SD98102	29	60	47	62	46	55	39	58	30	60	27	57	35	53	30	57	35	57	51	58	52	59	38	58
24	SD96306	33	59	49	62	47	54	42	59	24	58	24	57	27	50	30	57	45	56	46	58	54	58	38	57
25	SD97088	27	59	47	60	46	54	41	59	26	58	32	56	32	53	23	57	43	56	52	58	50	59	38	57
6	JERRY	31	59	49	60	38	54	39	57	33	57	22	55	27	49	26	54	44	56	53	57	53	57	38	56
16	JAGGER	32	61	56	61	41	56	38	57	30	60	24	57	41	54	28	60	26	56	59	59	36	57	37	58
27	SD97432	29	59	51	61	40	55	40	58	31	59	25	56	17	48	30	58	41	55	53	59	48	59	37	57
31	NUHORIZON	30	63	51	62	43	55	40	59	20	60	17	55	39	55	29	59	27	56	54	60	49	60	36	59
7	RANSOM	28	58	44	59	41	52	41	55	27	56	22	53	31	50	24	54	39	54	47	54	53	57	36	55
17	SCOUT66	29	61	49	63	44	57	39	59	27	60	20	56	28	54	28	59	31	56	50	59	48	61	36	59
15	CRIMSON	26	60	44	61	40	56	40	58	31	61	23	57	23	47	27	56	38	58	51	58	50	60	36	57
36	SD98W198	26	62	42	62	41	56	40	60	25	60	22	58	27	53	26	59	33	57	53	60	54	60	35	59
	Mean	31	60	54	62	44	55	43	59	28	59	27	57	33	52	30	58	39	56	53	59	52	59	40	58
	LSD .05	5	1	16	2	4	2	7	2	8	1	7	1	12	3	4	1	7	1	7	1	9	3		
	CV%	12	1	18	2	7	2	8	2	17	1	16	1	17	3	11	1	12	1	9	2	12	3		

Table 6. Milling and baking data of Wendy in the South Dakota Crops Performance Testing

ID	Nuplains	Wendy	Trego	Wesley
Grain volume weight, kg hl-1	46.4	46.3	46.2	45.0
Percent large kernels, %	46.8	63.3	65.0	76.1
Kernel wieght, mg	25.7	28.2	29.0	32.1
SKCS kernel hardness	72.3	73.2	70.2	63.6
Flour ash, g kg-1	4.3	4.2	4.2	4.5
Flour extraction, g kg-1	673	672	667	688
Flour protein content, g kg-1	115	112	110	121
Water Absorbtion, g kg-1	615	585	612	631
Make mix time, min	5.1	3.7	4.1	7.8
Mixograph tolerance	3.0	1.0	2.5	4.5
Loaf volume, L	0.88	0.88	0.85	0.86
Crumb grain score	4.6	3.5	4.0	4.9

Table 7. Quality parameters of selected lines grown in south Dakota environments and tested at the Hard Winter Wheat Quality Laboratory, USDA/ARS, Manhattan, KS.

		Single Kernel		Flour Character				Mixing			Baking	
	ID	SK_H	SK_W	F_YLD	F_ASH	F_PRO	F_ABS	M_ABS	M_MT	M_TOL	L_VOL	B_MT
2001	Arapahoe	61.5	28.8	68.4	0.40	10.7	60.9	60.8	3.9	4.0	805	5.7
	Crimson	82.8	27.3	66.8	0.42	10.5	61.2	61.1	2.6	3.0	905	3.4
	Expedition	57.8	32.8	71.1	0.34	10.9	61.0	61.1	5.5	5.0	795	7.4
	Harding	76.8	29.5	66.1	0.38	10.9	61.1	61.1	3.9	4.0	910	5.6
	Nuplains	74.3	26.6	69.3	0.40	10.4	61.1	61.3	2.6	3.0	825	4.5
	Trego	66.9	30.7	69.0	0.38	10.2	61.2	60.9	3.3	3.0	825	3.7
	WENDY	69.8	28.5	67.9	0.40	10.5	57.1	60.6	2.6	1.0	890	3.4
	Nursery St. Dev.	7.4	2.8	1.4	0.04	0.4	1.3	0.9	0.8	1.0	45	1.1
	Nursery C.V. %	11.6	9.1	2.0	8.84	4.1	2.1	1.4	22.3	28.3	5	23.3
	Nursery Mean	64.3	30.2	68.5	0.40	10.7	60.5	60.8	3.8	3.5	834	4.8
	Subset Mean	70.0	29.2	68.4	0.39	10.6	60.5	61.0	3.5	3.3	851	4.8
2002	Arapahoe	69.8	23.4	63.3	0.56	12.8	62.0	64.3	4.1	3.0	925	5.3
	Crimson	83.3	20.0	57.4	0.55	12.9	63.1	63.9	3.1	4.0	950	4.3
	Expedition	61.2	27.0	66.3	0.47	12.2	63.0	63.2	5.5	5.0	900	9.0
	Harding	67.0	22.2	62.7	0.53	13.2	63.4	64.5	4.5	4.0	990	5.8
	Nuplains	70.4	22.7	65.3	0.47	12.7	61.8	63.6	3.4	3.0	935	4.8
	Trego	73.4	24.4	64.4	0.46	11.8	61.2	62.7	3.4	2.0	875	3.5
	WENDY	76.7	22.0	66.6	0.44	11.8	59.8	59.6	2.8	1.0	875	3.2
	Nursery St. Dev.	6.8	1.3	2.5	0.04	0.5	1.0	1.2	0.6	1.0	50	1.3
	Nursery C.V. %	9.4	5.8	3.9	7.29	4.1	1.7	1.9	15.1	28.8	5	23.6
	Nursery Mean	71.8	23.1	63.7	0.51	12.4	62.0	62.9	4.1	3.6	927	5.4
	Subset Mean	71.7	23.1	63.7	0.50	12.5	62.0	63.1	3.8	3.1	921	5.1
2003	Arapahoe	71.3	29.7	66.3	0.31	12.3	63.6	63.4	4.0	4.0	845	5.0
	Crimson	77.8	27.2	65.1	0.31	12.8	62.2	64.3	2.1	3.0	915	3.1
	Expedition	66.4	29.6	67.6	0.30	12.7	63.6	64.1	5.8	6.0	925	8.3
	Harding	79.2	29.3	65.2	0.34	12.8	63.1	64.3	4.1	4.0	970	4.6
	WENDY	64.2	28.0	65.8	0.31	12.7	60.7	60.1	3.5	1.0	905	3.9
	Nursery St. Dev.	4.9	1.7	1.6	0.02	0.5	0.9	1.3	0.7	1.0	40	1.2
	Nursery C.V. %	6.9	5.7	2.4	5.45	3.9	1.5	2.0	17.2	23.8	4	21.4
	Nursery Mean	70.2	29.1	66.8	0.32	12.4	62.8	63.6	4.3	4.2	906	5.6
	Subset Mean	44.3	18.9	40.5	1.28	8.5	38.0	38.4	6.3	7.2	569	7.9
2001-2003	Arapahoe	67.5	27.3	66.0	0.42	11.9	62.2	62.8	4.0	3.7	858	5.3
	Crimson	81.3	24.9	63.1	0.43	12.1	62.2	63.1	2.6	3.3	923	3.6
	Expedition	61.8	29.8	68.4	0.37	11.9	62.5	62.8	5.6	5.3	873	8.2
	Harding	74.3	27.0	64.7	0.42	12.3	62.5	63.3	4.2	4.0	957	5.3
	WENDY	70.2	26.2	66.8	0.38	11.7	59.2	60.1	3.0	1.0	890	3.5
	Nursery Mean	68.8	27.5	66.3	0.41	11.9	61.8	62.4	4.0	3.8	889	5.3
	Subset Mean	71.0	27.0	65.8	0.40	12.0	61.7	62.4	3.9	3.5	900	5.2

SK_H = Single kernel hardness (scale of 1-100); SK_W = Single kernel weight (mg); F_YLD = Flour yield (percent of total product); F_ASH = Flour ash (percent at 14 % moisture basis); F_PRO = Flour protein (percent at 14 % moisture basis); F_ABS = Flour absorption (14 % moisture basis); M_ABS = Mixograph absorption (14 % moisture basis); M_MT = Mixograph peak mix time (minutes); M_TOL = Mixograph tolerance; L_VOL = Loaf volume; B_MT = Baking mix time (minutes).

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EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)

South Dakota Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

SD97W604

3. VARIETY NAME

Wendy

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)*

South Dakota State University
Ag Hall 129
Brookings SD 57007

5. TELEPHONE *(include area code)*

(605) 688-4149

6. FAX *(include area code)*

(605 688-6065

7. PVPO NUMBER

2005 00 102

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* **If no, please explain.** [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country

10. Is the applicant the original owner? [X] YES [ ] NO ***If no, please answer one of the following:***

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

[ ] YES [ ] NO **If no, give name of country**

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

[ ] YES [ ] NO **If no, give name of country**

11. Additional explanation on ownership *(if needed, use reverse for extra space)*:

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

STD-470-E (07-97) *(Destroy previous editions).*
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